



United States Department of Agriculture

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# Barber Ridge

## Environmental Assessment



Forest Service, Ozark-St. Francis National Forests, Mt. Magazine Ranger District, April 2020

**Cover Photo:** Cedar Piney Lake

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## Introduction

We prepared this environmental assessment to determine whether effects of the proposed activities would be significant and therefore require preparation of an environmental impact statement. By preparing this environmental assessment, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. For more details of the proposed action, see the “Proposed Action and Alternatives” section of this document on p. 3.

## Location of the Proposed Project Area

The Barber Ridge Project area is located within Township 6 North, Range 24 and 25 West, and Township 5 North, Range 24 West of Logan County, AR and Yell County, AR. The proposed project consists of compartments 25, 35, 36, 60, 63 and 64. The project area encompasses 7,149 acres of Forest Service land and 3,052 acres of private land (Figure 1). The only proposed activity that may occur on private lands is prescribed burning and that is only when an agreement is in place with the private land owner.

## Need for the Proposal

The need of this proposal is to achieve/improve the following management areas and general forest:

- ◆ Amend the Forest Plan to correct an error in management area designation that occurred when the Forest Plan was revised in 2005. At the time of plan revision, an area containing an approved off-highway vehicle (OHV) trail was assigned to the 2.B State Park Management Area designation. However, according to the Forest Plan as revised in 2005, no OHV routes are allowed in the State Park Management Area. Therefore, the portion of the State Park Management Area which contains the OHV route needs to be reassigned to the adjoining 1.G Special Interest Area Management Area designation.
- ◆ In the 750 acres of the Mt. Magazine Special Interest Area (MA 1.G), prescribed fire has not been implemented since 2006. This has caused an increase in fuels and a decrease in wildlife habitat. The desired condition of the area is to use prescribed fire to maintain wildlife habitat and reduce fuel buildups.
- ◆ In the 950 acres of the Scenic Byway Corridor (MA 1.H), portions have a thick midstory and overgrown understory. The desired condition is to have a well-developed herbaceous understory and a fairly open midstory.
- ◆ In the 5,409 acres of Mixed Forest (MA 3.C), multiple stands have stressed trees. In addition, the area mostly consists of old age classes and lacks young age classes. The desired condition is to have a diversity of successional classes (age classes). This area should be regularly thinned to reduce stress as trees age and to be prescribed burned every 3 to 10 years during both dormant and growing seasons to manage light levels reaching the forest floor for the maintenance of a moderate herbaceous component.
- ◆ The forested areas have over stocked stands. The desired condition is to have forests that are relatively resistant to major outbreaks of insects and disease that cause widespread

tree mortality. Thinning trees will reduce the stress to the remaining trees making for a healthier forest.

- ◆ Age-class distribution is currently disproportionate and favors mature age classes. Prairie warblers, a management indicator species for regeneration forest communities, are declining. The desired future condition for major vegetative communities and for wildlife is to have a relatively balanced age-class distribution.
- ◆ There are a few stands of the Shortleaf Pine-Oak Forest community type with failed regeneration in which enough seedlings did not live to re-establish the stands as a forest. The desired condition is to have these stands properly stocked with 500-700 trees per acre of the Shortleaf Pine-Oak Forest community type following the third year after planting or harvesting. The stand needs to be in an open condition to provide enough light for seedlings to properly stock the stand. In order to re-establish these poorly stocked stands, they need to be clearcut and planted.
- ◆ The project area contains fire-dependent vegetation but has had a general lack of prescribed burns. The desired condition for fire-dependent communities is to be maintained by recurring fire at appropriate intervals.
- ◆ The project area contains a dispersed recreation site at a sediment pool. The area has been used by locals for fishing and is in disrepair. The desired conditions for recreation are to provide safe, accessible, and well-maintained sites.
- ◆ The transportation system in the project area has too many roads; a road that crosses onto private land; and a portion of road that lacks the capacity for logging trucks. The desired condition is to have well-maintained roads and to remove unnecessary roads. Currently, there are 3.5 miles of road per square mile of land. The desired condition is to reduce road density to 3 miles per square mile of land.
- ◆ The project area contains one impediment to aquatic organism passage. The concrete slab in place across Lee Creek along Spring Lake Road is an impediment to aquatic organism passage. Riparian and aquatic-associated terrestrial communities are to be managed for protection and maintenance of habitat for aquatic species. The desired condition is to have sufficient stream flow and water quality to support all components of native and aquatic communities.



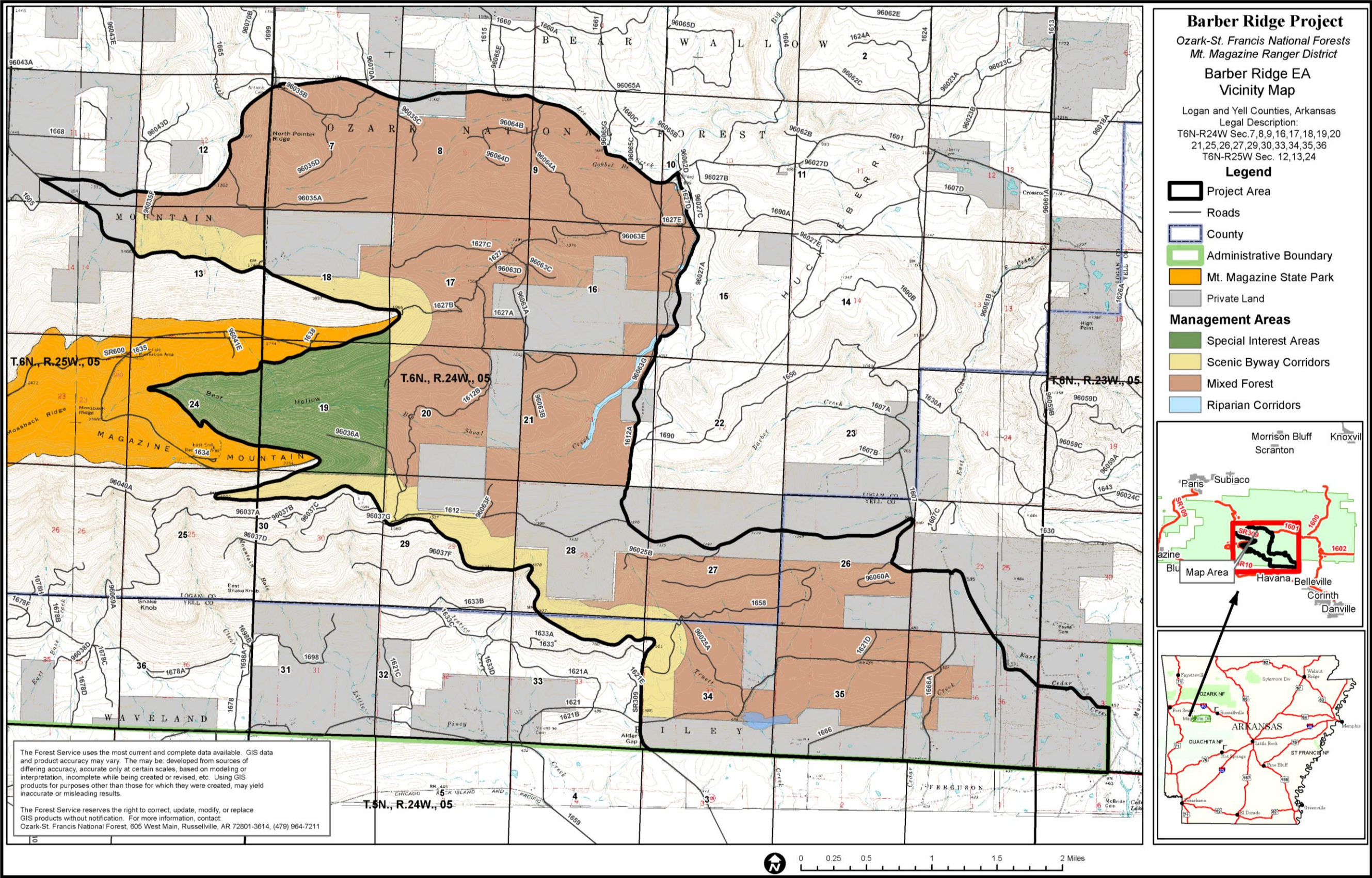


Figure 1. Vicinity Map



## What will be Decided?

The need for the outlined proposal sets the scope of the project and analysis to be completed. Based on the analysis, the District Ranger will determine whether the proposed project and alternatives could result in a significant impact. If there is a finding of no significant impact (FONSI), the District Ranger will select an alternative deciding:

- ◆ Whether to implement all or parts of the proposed action;
- ◆ What specific design criteria or mitigation measures are needed;
- ◆ What specific project monitoring requirements are needed to assure design criteria and mitigation measures are implemented and effective.

The decision will be based on:

- ◆ How well the selected alternative achieves the need,
- ◆ How well the selected alternative protects the environment and addresses issues and concerns, and
- ◆ How well the selected alternative complies with relevant policies, laws and regulations.

## Proposed Action

The Proposed Action (Table 1) consists of:

### **PLAN AMENDMENT**

- Amend the Forest Plan by reclassifying 5.75 acres of the 2.B State Park Management Area to 1.G Special Interest Areas.

### **TIMBER/SILVICULTURE TREATMENTS**

- Harvest of mature shortleaf pine using shelterwood cutting is proposed on approximately 402 acres within compartment 25 stand 8, compartment 35 stands 1 and 18, compartment 60 stands 4, 15, and 24, compartment 63 stand 30, and compartment 64 stand 6. Shelterwood cutting is a process in which the majority of the merchantable shortleaf pine trees are removed in an area where the overstory trees have reached a mature age. Larger shortleaf pine trees will be left to provide seed for regeneration and creation of a new stand. These larger trees would be left at a rate of approximately 20-30 trees per acre. Additionally, den trees and mast producing hardwood would be left at a rate of approximately 10-20 trees per acre.
- Removal of seedtrees from shelterwood cut stands is proposed on approximately 494 acres. Of those 494 acres, 402 acres would be the proposed shelterwood cuts described in the previous paragraph and 92 acres are from previous entry shelterwood harvested stands that are certified adequately stocked with seedling/saplings and the seedtrees are no longer needed to provide regeneration. The 92 acres consists of compartment 25 stand 19, compartment 60 stand 11, and compartment 64 stand 31 of the previous entry shelterwood cuts.
- In order to rehabilitate stands poorly stocked due to past management practices, clearcuts are proposed on approximately 118 acres within compartment 35 stands 5 and 22 and compartment 63 stand 2. All trees within these stands would be removed to allow for regeneration of trees.



- Perform wildlife stand improvements on approximately 88 acres within compartment 25 stand 1, compartment 63 stand 1, and compartment 64 stand 2. Stands would be thinned to a basal area of 20 to 40 square feet per acre.
- Perform site preparation, release, and planting on approximately 760 acres. Of the 760 acres, 402 acres are shelterwood harvest areas, 118 acres are clearcut areas, 92 acres are existing seedtree removal areas, 88 acres are wildlife stand improvement areas, as well as 60 acres within compartment 63 stand 12 and compartment 64 stand 30. Site preparation using handtools/chemical/prescribed burning and subsequent release using handtools/chemicals would occur following the different prescribed treatments listed. If selected, chemical application would be done on individually selected stems. Mast producing trees, such as oaks, 8.0" (inches) diameter or larger at 4.5' (feet) height above ground level would not be treated during site preparation or release. The following trees, shrubs, and plants, regardless of size, would not be treated during site preparation and release: black cherry, dogwood, French mulberry, persimmon, serviceberry, plum, and Ozark chinquapin.
  - Site preparation would be accomplished with triclopyr, glyphosate, and/or imazapyr or a combination of these herbicides. Treatment would be done through foliar spraying, injection, or cut stump treatment directly on the target plant. These treatments help control competing vegetation until shortleaf pine becomes established. Herbicides are applied at the lowest rate effective in meeting project objectives and according to guidelines for protecting human and wildlife health. There would be no chemical application within 100 feet of private land, 300 feet of a private residence, or within the streamside management zones as defined in Table 3-3 of the 2005 Ozark-St. Francis National Forests Revised Land and Resource Management Plan.
  - To facilitate site preparation after harvesting, firewood removal would be evaluated for demand and availability. If areas are set up for firewood removal, firewood would be removed through firewood permits. Mast producing trees above 8.0" diameter at 4.5' height would not be cut for firewood unless approved by a wildlife biologist or technician in order to improve mast production on an adjacent tree.
  - Planting of seedlings in these stands would be done if natural seedfall does not regenerate the sites. Stocking evaluations would be done one to three years after site preparation to determine stocking. If a stand is not adequately stocked, planting would be done the following winter. Pine would be planted in pine stands and hardwood would be planted in hardwood stands.
  - Once seedlings are established and a release treatment is deemed necessary, the above stands as well as an additional 21 acres of compartment 60, stand 20 would be released from competition. Release would be accomplished by directed foliar application, injection or cut surface treatment. Herbicides triclopyr, glyphosate, imazapyr or a combination of these herbicides would be used to implement these treatments. These treatments would be applied within a 4-foot radius of the selected leave tree to be released on an 8' x 8' spacing. After treatment, the selected leave trees would gain sufficient height growth to exceed the competing vegetation.
- Perform pine pre-commercial thinning in existing pine seedling/sapling stands and pine poletimber stands on approximately 449 acres within compartment 25 stands 7, 13, 21, compartment 35 stand 11, compartment 36 stand 7, compartment 63 stands 5, 11, 19, and 29, and compartment 64 stand 21. This would be accomplished by handtools on individually

selected stems within a 4-foot radius of the selected pine leave tree. Pine leave trees would be chosen on an 8' by 8' spacing. After treatment, the selected shortleaf pine leave trees would gain sufficient height growth to exceed the competing vegetation.

- Commercially thin stands of shortleaf pine on approximately 1,962 acres and shortleaf pine/hardwood on approximately 524 acres. The shortleaf stands are compartment 25 stands 4, 7, 9, 13, and 21, compartment 35 stands 3, 10, 11, 15, and 27, compartment 36 stands 7, 12 and 14, compartment 63 stands 4, 5, 8, 9, 11, 13, 15, 17, 18, 19, 28, and 29, and compartment 64 stands 1, 3, 4, 5, 8, 9, 11, 13, 14, 19, 20, 21, 24, 25, and 27. Stands would be thinned to a basal area of 60 square feet per acre.
- Permit salvage/sanitation thinning on up to approximately 7,149 acres. Trees that blow over or die due to weather events or insect/disease events would be removed when feasible for safety, forest health, or public utilization reasons.
- Thin Eastern red cedar on up to approximately 7,149 acres of pine and hardwood stands.

### **WILDLIFE HABITAT MANAGEMENT**

- Perform wildlife and fuels reduction prescribed burning on approximately 7,102 acres of Forest Service land and up to 3,052 acres on private land for a maximum potential acreage of 10,154 acres. Burning across private lands would only happen if an agreement exists between the Forest Service and the private landowner. Wildlife habitat improvement and fuels reduction burning is proposed on a 3- to 7-year rotation in both the dormant and growing seasons on all Forest Service land within the project boundary.
- In order to conduct prescribed burning, the creation of up to approximately 27.4 miles of new firelines may be needed. In addition, fireline maintenance on approximately 3.6 miles of existing firelines, 2.2 miles of old roads, and up to 27.4 miles on any new firelines created may be needed. New firelines along the boundary of private land may be created, if needed, to serve as a barrier. Firelines, 20-foot wide, would be created using a dozer to remove vegetation. New and existing firelines would need to be maintained by plowing the line before a scheduled prescribed burn.
- Create four linear plots along the two rows of planted trees in the Cedar Piney Pasture. The north to south row of trees is approximately 550 feet in length. The east to west row of trees is approximately 750 feet in length. Both sides of each row of planted trees in the field will be disked up to 20 feet wide to expose the bare dirt in order to create a fire break and a linear plot. Total acreage, approximately, of the linear plots would be 46 acres. The plots will be planted with species suitable to wildlife and maintained as needed. Maintenance would entail disking the fireline/linear plots to bare dirt prior to being prescribed burned and then reseeding with a wildlife-friendly seed mixture following the burn.

### **TRANSPORTATION MANAGEMENT**

- Close Forest Service Road 1658, approximately 3.4 miles in length. The road is a dead end and is currently seasonally open. After the sale activities are completed, routine maintenance would stop and the road would be blocked.
- The following roads would be decommissioned: all 0.9 miles of currently closed Forest Road 96025A, approximately 0.1 miles of Barber Ridge Road, approximately 0.01 miles of 96036A, and all 0.4 miles of 1627D. These roads would be blocked and removed from the

Forest Service transportation system road layer. Roads would be allowed to rehabilitate naturally.

- Approximately 0.5 miles of roads would be realigned. Road 1627 would have 0.3 miles realigned to remove a section of roadway off of private land and onto Forest Service land. Barber Ridge Road would have 0.2 miles realigned to allow a further sight distance when pulling onto State Highway 309. This activity would entail constructing new portions of road to meet up with the existing portion of road.
- Approximately 5.4 miles of roads would be reconstructed to support traffic associated with timber harvesting. Approximately 0.1 mile of road would be officially designated as part of the Forest Service transportation system and be reconstructed to allow public access to Cedar Piney sediment pool for fishing. Of the 5.4 miles associated with timber harvesting, approximately 1.6 miles are Forest Service Road (FSR) 1612B, 0.8 miles are Barber Ridge Road, and 3.0 miles are FSR 1627. The 0.1 mile of road to be incorporated into the Forest Service transportation system would be designated 96060B and open to the public. Reconstruction would involve, but not be limited to, clearing the existing vegetation back to daylight the road, replacing failing drainage structures, such as culverts, and adding additional structures to facilitate drainage. Geotextile and oversize aggregate may be added to improve the bearing strength of the sub-base. Borrow material would be used when needed to raise the road grade and to cover exposed rock. The travel way would be resurfaced with gravel. Realignment of some sections of road may be required. All disturbed areas would be mulched and seeded, along with the use of hay bales for erosion control where needed. During road maintenance and road reconstruction, some road/stream crossings may be replaced to improve aquatic organism passage. These replacement crossings would allow for passage of all aquatic species.
- Temporary road construction, where needed, to provide access to harvesting areas during the timber sale. These roads would be blocked and seeded once the sale is completed. Total miles of temporary roads and skid trails from harvesting would be approximately 58.6 miles. At an average width of 16 feet, approximate total acreage would be 111.5 acres.
- Road maintenance would be performed on up to 46.1 miles, as needed, to maintain or improve the roads in no less than the same condition that existed prior to timber sale activity. Maintenance may consist of, but is not limited to, mechanical brushing and the use of herbicides to control vegetation along roadsides, removal or repair of minor slides or slumps, cleaning of roadside ditches and drainage devices, spot aggregate placement, and blading of the travel way. All disturbed areas would be mulched and seeded along with the use of hay bales for erosion control where needed.
- The concrete slab in place across Lee Creek along Spring Lake Road (1602) is an impediment to aquatic organism passage and would be replaced with a structure (i.e., bridge, bottomless culvert system, etc.) to allow for organism passage and substrate movement. The slab would be removed using mechanical methods. A maximum of four acres would be disturbed during the installation of the aquatic organism passage structure.
- Two existing shale pits and one new shale pit would be made available as mineral materials community pits. The two existing shale pits have been dormant and are partially revegetated. The Apple Shale Pit is 1.6 acres in size and the Alder Gape Shale Pit is 1 acre in size. A new shale pit, North Pointer Shale Pit, would be developed. Each shale pit would be no larger than 5 acres in size, for a potential total of 15 acres of shale pits in the project area. Borrow

material from these community pits would be removed for use during the proposed road work in this project, be made available to counties through permits, and be made available under permit to the general public for personal use. The shale pits would be managed according to the operating plans created specifically for each shale pit. Erosion control measures, such as hay bales, sedimentation ponds, and construction of diversion ditches, would be defined in the operating plan and implemented to limit the environmental effects outside the borrow pit location. Quantity of shale removed would be recorded and each shale pit would be inspected annually. If the district engineer, minerals technician, and/or special use administrator determine the quantity of shale remaining needs to be reserved for Forest Service use only, then the shale pit would be converted to an in-service pit and neither the county nor public would be able to use the shale pit. If the district engineer, minerals technician, and/or special use administrator determine the quantity of shale has been depleted within the 5-acre maximum size, the shale pit would be closed.

### **RECREATION MANAGEMENT**

- Improve the dispersed recreation site at Cedar Piney Lake Dam. To reduce erosion, a barrier (pipe fence, large rocks, or the like) would be constructed around the parking area and the surface parking area would be improved with shale/SB2 gravel and geotextile. The jetty would be monitored for erosion. If the vegetation has been depleted and soil is eroding into the sediment pool, then an impervious substrate (concrete, gravel, etc.) would be constructed as a sidewalk with seven accessible turnouts down the jetty.

**Table 1. Overview of Proposed Actions.**

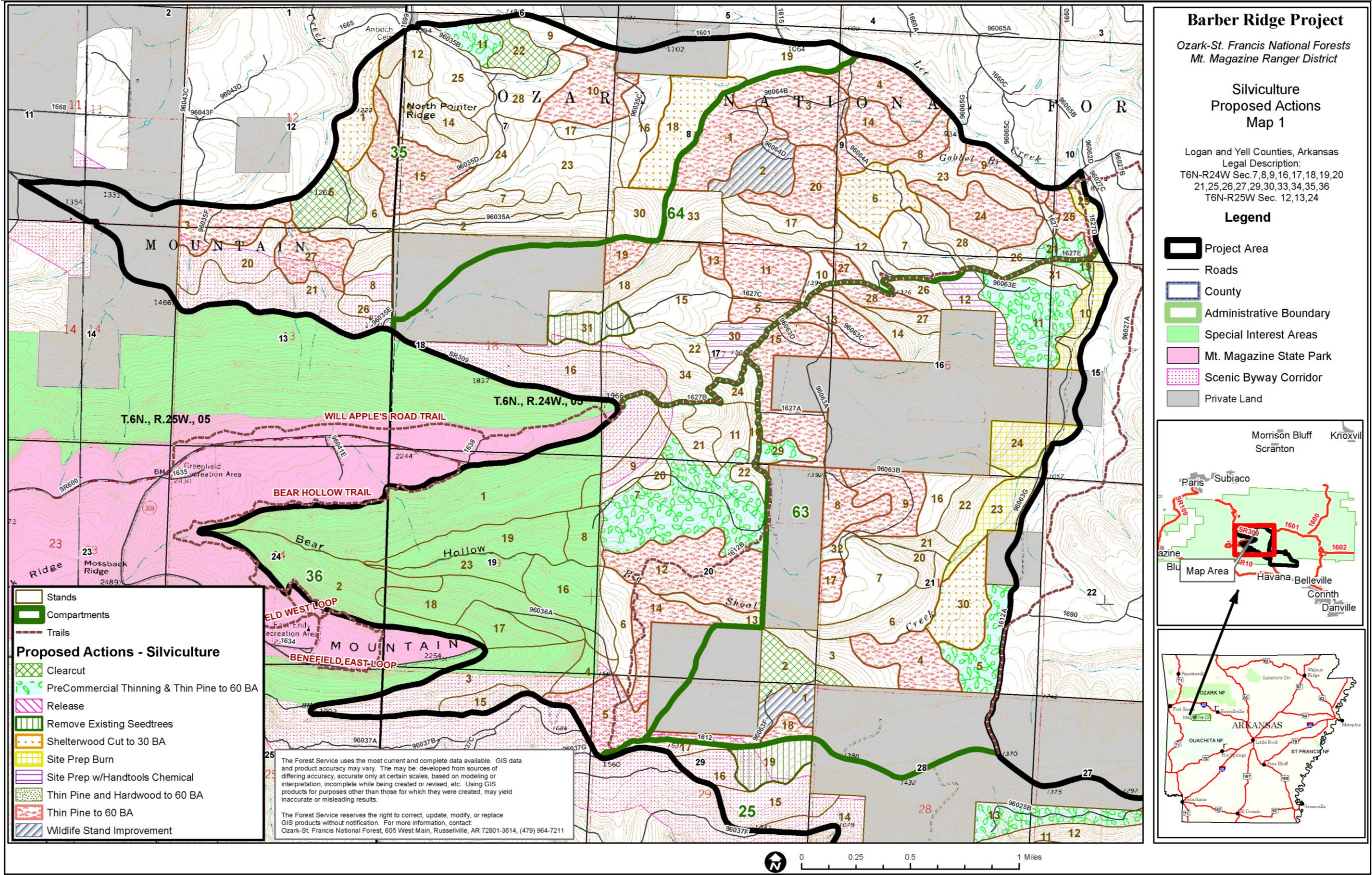
<b>Treatment Type</b>	<b>Total*</b>	<b>Treatment Type</b>	<b>Total*</b>
Commercial Thin Pine <sup>a</sup> and Pine/Hardwood <sup>b</sup> to 60 BA/acre	1,962 <sup>a</sup> /524 <sup>b</sup>	Prescribed Burns/acres**	7,102 (10,201)
Shelterwood Harvest to 30 BA/acres	402	Create New Firelines/miles	Up to 27.4
Remove Seedtrees/acres	494	Maintain Firelines/miles***	Up to 33.2
Clearcut/acres	118	Close Roads/miles	3.4
Pre-commercial Thin/acres	449	Decommission Roads/miles	1.5
Wildlife Stand Improvement/acres	88	Reconstruct Roads/miles	5.4
Site Preparation with Handtools, Chemicals, and/or Burns/acres	760	Designate New FS Road/miles	0.1
Planting Seedlings/acres	760	Road Maintenance/miles	Up to 46.1
Release/acres	781	Road Realignment/miles	0.5
Salvage Thinning/acres	Up to 7,149	Expand and Create Borrow Pit/acres	Up to 15
Cedar Thinning/acres	Up to 7,149	Temporary Road Construction/miles	Up to 58.6
Replace Concrete Slab with Aquatic Organism Passage	1	Linear Food Plots/acres	46
Undesignate OHV Route/miles	0.94	Change Management Area Designation/acres	5.75

\*All numbers are approximate.

\*\*All acres for prescribed burning would decrease fuels and improve wildlife habitat. Some stands require site preparation burns totaling 927 acres of prescribed burning. The 10,201 acres is the maximum acreage if private landowners enter into a Wyden Agreement to have their land burned when we burn. Acreage may be less as no burns would occur in streamside management zones.

\*\*\*The maintenance of firelines includes 3.6 miles of existing, 2.2 miles of old roads, and up to 27.4 miles of new fireline.







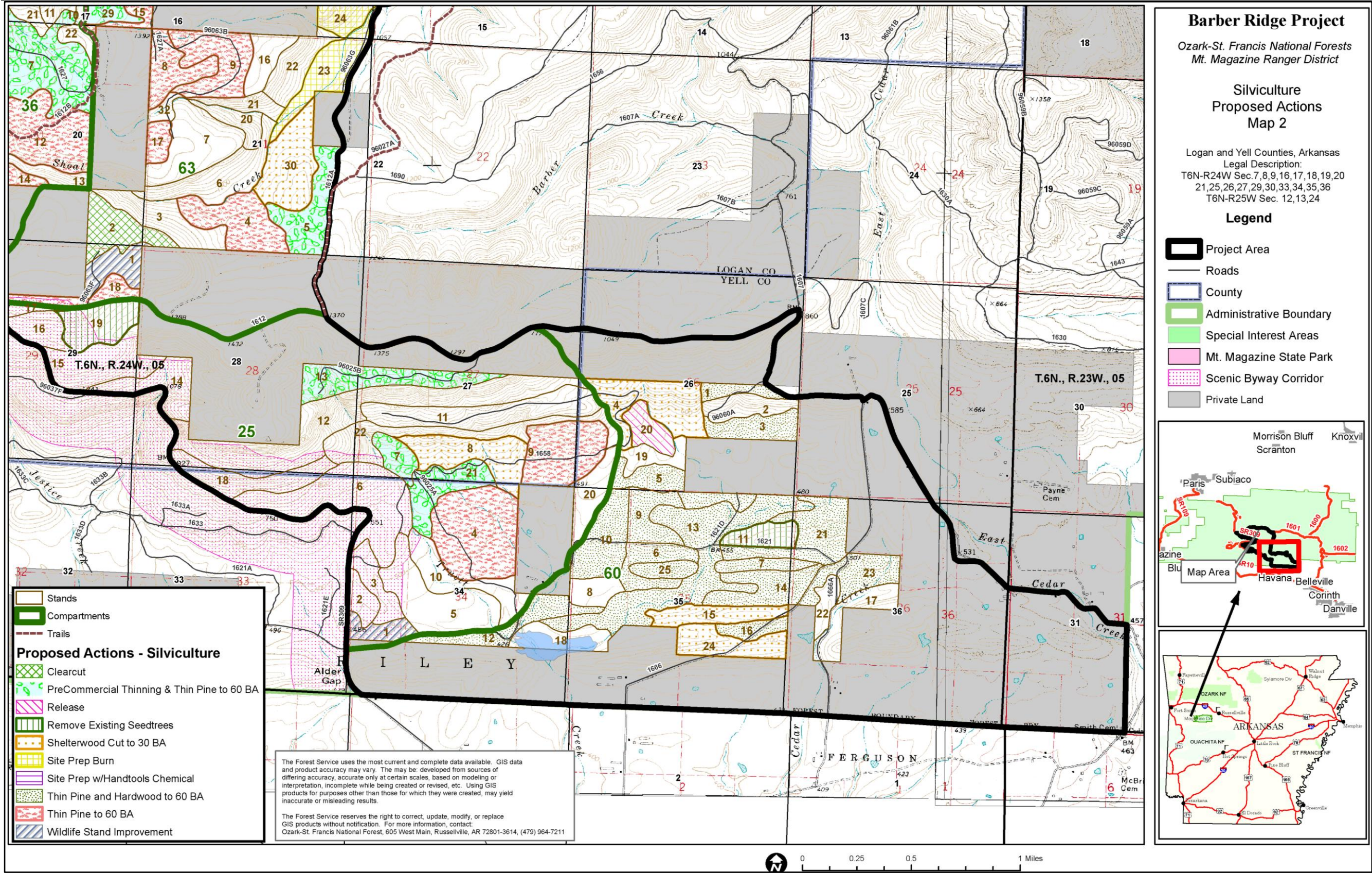


Figure 3. Silviculture Proposed Actions - Southern Section



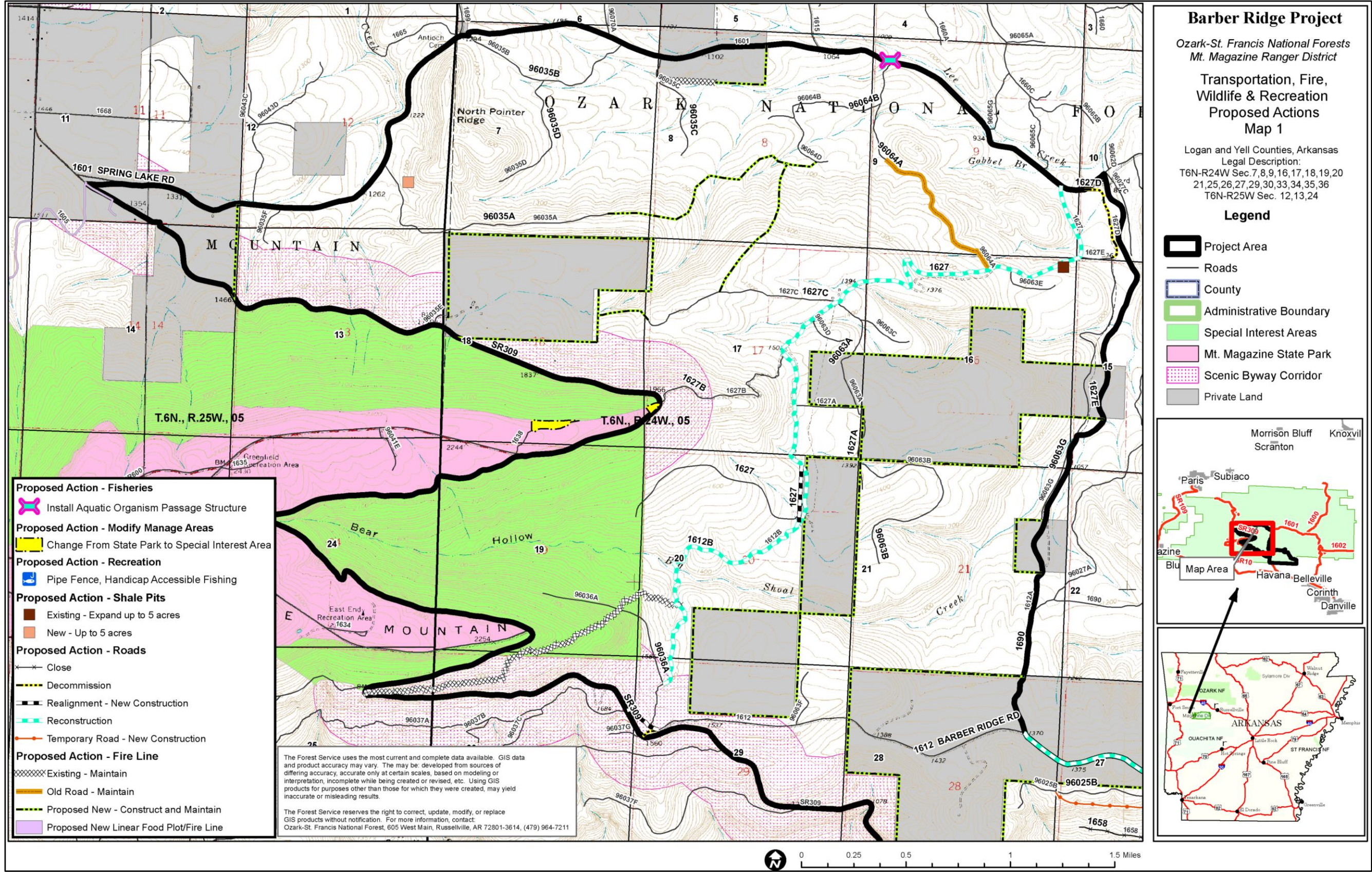


Figure 4. Transportation, Fire, Wildlife, and Recreation Proposed Actions - Northern Section.







## DESIGN CRITERIA

Standards from the 2005 Ozark-St. Francis Revised Land and Resource Management Plan and best management practices for water quality protection by the Arkansas Forestry Commission will be followed. The following criteria were identified by resource specialists:

- To preserve visual quality along trails, no log landings will be created within 50 feet of a trail.
- A buffer of 10 feet on both sides of a trail will be left unmarked of trees to harvest. This will keep the canopy closed above the trail, giving patrons a more scenic view.
- A 50-foot slash zone on both sides of the trail will be maintained at a height of 2 feet or less. This slash zone will contribute to a more aesthetically pleasing experience for patrons utilizing the trails.
- Historic Properties (HP)1 - Site Avoidance During Project Implementation: Avoidance of historic properties will require the protection from effects resulting from the undertaking. Mitigation measures include establishing clearly defined site boundaries and buffers around archeological sites where activities that might result in an adverse effect and routing proposed new roads, temporary roads, log landings, and skid trails away from historic properties. Buffers will be of sufficient size to ensure that site integrity is not compromised.
- HP2 - Site Protection During Prescribed Burns:
  - Firelines: Historic properties located along existing non-maintained woods roads used as firelines will be protected by hand-clearing those sections that cross the sites. Although these roads are generally cleared of combustible debris using a small dozer, those sections crossing archeological sites will be cleared using leaf blowers and/or leaf rakes. There will be neither removal of soil, nor disturbance below the ground surface, during fireline preparation. Historic properties and features located along proposed routes of mechanically-constructed firelines, where firelines do not now exist, will be avoided by routing fireline construction around historic properties. Sites that lie along previously constructed dozer lines from past burns (where the firelines will be used again as firelines) will be protected during future burns by hand clearing sections of line that cross the site, rather than re-clearing using heavy equipment. Where these activities will take place outside stands not already surveyed, cultural resource surveys and consultation will be completed prior to project implementation. Protection measures HP1, HP3, and HP4 will be applied prior to project implementation to protect historic properties.
  - Burn Unit Interior: Combustible elements at historic properties in burn unit interiors will be protected from damage during burns by removing excessive fuels from the feature vicinity and, where applicable, by burning out around the feature prior to igniting the main burn and creating a fuel-free zone. Historic properties containing above ground, non-combustible cultural features and exposed artifacts will be protected by removing fuel concentrations dense enough to significantly alter the characteristics of those cultural resources. For sites that have been previously burned or that do not contain combustible elements or other above-ground features and exposed artifacts, no additional measures are proposed. Past research indicates that prescribed burning will not be sufficiently intense to cause adverse effects to these features.
  - Post-Burn Monitoring: Post-burn monitoring may be conducted at selected sites to assess actual and indirect effects of the burns on the sites against the expected effects.

State Historic Preservation Office (SHPO) consultation will be carried out with respect to necessary mitigation for any sites that suffer unexpected damage during the burn or from indirect effects following the burn.

- **HP3 - Other Protection Measures:** If it is not feasible or desirable to avoid a historic property that may be harmed by a project activity (HP1), then the following steps will be taken:
  - In consultation with the Arkansas SHPO, the site(s) will be evaluated against National Register of Historic Places (NRHP) significance criteria (36 CFR 60.4) to determine eligibility for the NRHP. The evaluation may require subsurface site testing;
  - In consultation with the Arkansas SHPO, relevant federally-recognized Tribes, and if required with the Advisory Council on Historic Preservation (ACHP), mitigation measures will be developed to minimize the adverse effects on the site, so that a finding of No Adverse Effect results;
  - The agreed-upon mitigation measures will be implemented prior to initiation of activities having the potential to affect the site.
- **HP4 - Discovery of Cultural Resources during Project Implementation:** Although cultural resources surveys were designed to locate all NRHP eligible archeological sites and components, these may go undetected for a variety of reasons. Should unrecorded cultural resources be discovered, activities that may be affecting that resource will halt immediately; the resource will be evaluated by an archaeologist, and consultation will be initiated with the SHPO, tribes and nations, and the ACHP, to determine appropriate actions for protecting the resource and mitigating adverse effects. Project activities at that locale will not resume until the resource is adequately protected and until agreed-upon mitigation measures are implemented with SHPO approval.

## **NO ACTION ALTERNATIVE**

With the No Action Alternative, no new actions would be implemented. Current projects covering invasive species treatments, road improvements, wildlife opening management, and grassland improvements would continue being implemented in accordance with the Forest Plan.

## **RESOURCES EVALUATED BUT DISMISSED FROM DETAILED ANALYSIS**

The Proposed Action is a small-scale decision which will affect a portion of the 4,097 acres of Forest Service lands within the project area (which equates to approximately .4% (four-tenths of one percent) of the total forested area on the Ozark-St. Francis National Forests). A complete and quantitative assessment of forest carbon stocks and the factors that influence carbon trends (management activities, disturbances, and environmental factors) for the Ozark-St. Francis National Forests is available in the project record (Dugan *et al.*, 2019). Based on the very limited portion of the Forests covered by this analysis, the Proposed Action is not likely to have a measurable effect to carbon storage on the forest, or to global pools of greenhouse gases. In addition, climate change has not been raised as an issue of concern during scoping. Therefore, it has been dismissed from further analysis.

## Environmental Impacts of the Proposed Action and Alternatives

This section summarizes the potential impacts of the proposed action and alternatives. The scope of analysis varies based on environmental issue being analyzed. The scope is defined for each resource analyzed in their section. The time frame for considering cumulative effects varies based on activity being implemented. For herbicide effects, the time frame is generally less than one year before a project area is treated and less than one year beyond the time when the area is treated. For mechanical treatments, the time frame is three years before and three years past treatment.

When considering cumulative effects, the following past, present and reasonably foreseeable activities based on past and current trends and human-caused disturbances on the Mt. Magazine Ranger District will be considered: chemical uses (1,000 acres/year) and wildlife opening activities.

### Soil Productivity

The analysis area for direct, indirect, and cumulative effects on soil resources encompasses all land within individual treatment units and landings. Existing classified National Forest system roads and trails are considered dedicated lands for other purposes and, as such, soil quality standards do not apply.

The potential detrimentally disturbed acres were calculated using coefficients based on past Ozark-St. Francis National Forests soil monitoring data. The coefficients were developed by taking the average of the percent of harvested areas that were detrimentally disturbed by various harvest methods. This monitoring information is in the project file and is also available at the Forest Supervisor's Office.

Direct effects on soils from proposed activities were estimated by analyzing the effects of compaction, erosion, burning, rutting, and displacement on the soil surface, which is the most productive layer, and also the easiest to disturb through management activities.

**Table 2. Potential detrimental soil disturbance coefficients used for various harvest types**

Harvest Type	Detrimental Soil Disturbance Coefficient (%)
Hardwood – Group Selection	4
Hardwood - Thinning	7
Hardwood - Shelterwood	4
Pine - Clearcut	17
Pine – Commercial Thinning	18
Pine – Pre-Commercial Thinning	18
Pine – Group Selection	5
Pine – Single Tree Selection	9
Pine/Hardwood – Seed Tree Removal	10
Pine/Hardwood - Shelterwood	14
Pine/Hardwood - Clearcut	20

Acres of detrimental disturbance were calculated by multiplying activity area size by the disturbance coefficient derived from monitoring reports. Coefficients used for this analysis are displayed in Table 2, the potential detrimental disturbance coefficients used for various harvest and cutting methods.

The indicator for the analysis is detrimental soil disturbance measured as a percentage within the activity areas, with the desired goal to design new activities that do not result in detrimental soil conditions over more than 15 percent of an activity area.

## Effects

### PROPOSED ACTION

Out of the 10,201 acres (USFS and private acres) within the project boundary, approximately 40% of the project area (4,083 acres) would potentially receive mechanical treatment. However, not all of these acres will be subjected to soil disturbance.

Over the initial four years of the Barber Ridge Project from 2022 to 2025, there would be a total of 4,083 acres receiving timber and wildlife treatments. Based on the proposed treatments and acreages, approximately 6.98% of the project area may have a temporary reduction in productive soil capacity (Table 3). The total area disturbed from transportation related activities, including shale pits, is 1.3%. The total area disturbed from fireline activity is 0.25%. Thus, for all proposed activity, the total area disturbed is 8.5%, which is less than the 15% threshold identified in the 2005 Ozark-St. Francis National Forests Revised Land and Resource Management Plan (Forest Plan).

**Table 3. Total of project area disturbed by timber and wildlife treatments**

Treatment	Detrimental Disturbance Coefficients (%)	Acres	Year	Total Area Disturbed (acres)	Total Area Disturbed (%)
Shelterwood Harvest	0.14	200	2022	28	0.27
Shelterwood Harvest	0.14	202	2023	28	0.27
Seedtree Removal	0.10	92	2022	9	0.09
Seedtree Removal	0.10	402	2023	40	0.39
Clear Cutting	0.20	118	2022	24	0.23
Wildlife Stand Improvement	0.1	44	2022	4.4	0.04
Wildlife Stand Improvement	0.1	44	2023	4.4	0.04
Linear Food Plot	1.0	46	2022	46	0.45
Commercial Thinning	0.18	800	2022	144	1.41
Commercial Thinning	0.18	800	2023	144	1.41
Commercial Thinning	0.18	886	2024	160	1.57
Pre-Commercial Thinning	0.18	449	2025	81	0.79
Total		4083		712.8	6.98



Approximately 26 acres (<1% of the burn area) would sustain a temporary reduction in soil productivity due to fireline construction. Firelines would be bladed and seeded when prescribed burning is completed to speed recovery of soil productivity and to prevent erosion. In general, three to five years is required for recovery from temporary soil productivity loss, according to monitoring studies that have been conducted on the Ozark-St Francis National Forests.

The proposed prescribed burns would be of low to moderate intensity, which would expose soil on 20% or less of the burn area and leave the duff layer intact on 80% of the burn area (Forest Plan). The remaining duff, root mat, surface gravel and stones protect the soil from erosion after the burn. Moderate burns cause minor erosion, because they expose soil on less than 20 percent of the burned area and recovery usually takes one year. Light burns cause no erosion because they expose almost no soil (Dissmeyer and Stump 1978). Low-intensity burns have little, if any, adverse effect on soil erosion even on relatively steep slopes (Stanturf *et al.* 2002). Based on this information, the effects to soil from erosion due to prescribed burning activities is generally negligible.

From a cumulative effects standpoint, most of the impact to soils would occur where skid trails and temporary roads are located. Skid trails and temporary roads, after project activities, would be disked, fertilized, and seeded where needed to prevent erosion and to help restore soil productivity to previous levels. The proposed harvest activities are likely to cause a temporary loss in soil productivity that could last an estimated 20 to 25 years if the soil disturbance is mitigated by disking or ripping (Weeks 2001). Existing logging roads, skid trails, and log landings are expected to be used in future harvests, which will reduce the amount of cumulative effects.

Cumulatively, the maintenance of 29 acres of wildlife openings would add 0.3% total area of disturbance. The total area disturbed from the direct, indirect, and cumulative effects is 8.53% of the project area which is less than the 15% threshold identified in the Forest Plan and are therefore not significant for soils.

## Northern Long-eared Bat

White Nose Syndrome is the primary cause in the population declines of northern long-eared bat. Other actions, such as logging, may add to the loss of individuals and populations at the local scale (USDI FWS 2015).

### Effects

#### PROPOSED ACTION

Although the chance is very low, this project could result in the accidental loss of individual northern long-eared bats by removing or damaging large-diameter trees occupied by bats. The proposed action was designed to incorporate all Forest-wide standards, and direction provided by the USFWS related to the conservation of this species.

This project is likely to adversely affect the northern long-eared bat; however, there are no effects beyond those previously disclosed in the programmatic biological opinion dated August 5, 2015 (USDI FWS 2015). Any taking that may occur incidental to this project is excepted from the prohibitions for taking threatened species under 50 CFR 17.31 and 17.32. This project is consistent with the Forest Plan, the description of the proposed actions in the programmatic

biological opinion, and activities excepted from taking prohibitions under the ESA section 4(d) rule applicable to the northern long-eared bat. Therefore, the programmatic biological opinion satisfies the Forest Service's responsibilities under ESA section 7(a)(2) relative to the northern long-eared bat for this project.

## Water Quality

The proposed project falls into the Shoal Creek (1111020205), Chickalah Creek-Petit Jean River (1111020404), and Sixmile Creek (1111020201) watersheds. At the smallest scale, the proposed project is located within three sub-watersheds (**Error! Reference source not found.4**). These sub-watersheds serve as the analysis area for the proposed project with respect to water resources.

**Table 4. Sub-watersheds within the Barber Ridge Project Area.**

Hydrologic Unit Code	Name	Total Acres	National Forest Acres	Private Acres	Project Acres
111102020106	Upper Short Mountain Creek	29,358	17,184	11,919	554
111102020501	Gulf Creek-Big Shoal Creek	18,146	15,318	2,828	5,811
111102040402	Piney Creek-Petit Jean River	23,781	7,566	16,299	3,834

There are over 252 miles of streams in the analysis area sub-watersheds. The proposed project area is immediately associated with only 33 miles of streams which eventually flow into either Big Shoal Creek to the north, thru Cedar Piney Lake and into Big Piney Creek to the south, or Cove Creek and into Cove Lake to the northwest. Bear Hollow, Big Shoal Creek and Truett Creek are the only named streams in the proposed project area.

Within the watershed analysis area, only approximately 56% of the land is administered by the Forest Service. This leaves a sizable proportion of the land within the watersheds as privately owned. Approximately 88% of the analysis area is forested. The balance of the watershed land use is mainly pasture areas.

Within the analysis area, roads are found both within the forest boundaries and outside the forest boundaries. There are approximately 248 miles of roads on the forest within the analysis area, 44 miles of which occur within the project area. Within the project area, there are approximately 12 stream crossings where the current road system crosses or intersects a stream.

Water quality standards for the project area, and the sub-watershed analysis areas for this project, are determined by the Arkansas Pollution Control and Ecology Commission Regulation 2 – Water Quality Standards for Surface Water (2017). There are no 303(d) listed streams (impaired water bodies) within the watershed analysis area boundaries.

## Effects

### PROPOSED ACTION

Changes to water quality should not exceed the standards determined for the identified designated uses. The activities that may result in direct and indirect effects are vegetation management, silvicultural site preparation, road work, fire line construction and maintenance, shale pit construction/expansion and prescribed burning.

In a summary of silviculture activity effects in the Ozark-Ouachita Highlands, Lawson (1986) documented the undisturbed erosion from small watersheds and the amount of sediment produced because of vegetation management practices. Undisturbed sites produced about 13.8 lbs/acre of sediment, with 70% of this amount attributed to large precipitation events. Seedtree harvests produced 31.3 lbs/acre of sediment during the first year after harvest. Three years after the treatment, the erosion rates were similar to the undisturbed site. Another study by Lawson and Hileman (1982) found no statistically significant differences in stream turbidity between seedtree removal sites and undisturbed control sites. Seedtree silvicultural practices in Arkansas result in production of sediment, but at levels below those found on forest lands of the eastern United States that are managed using well-established treatments. Therefore, the vegetation management practices proposed for this project would result in temporary increases of sediment that could affect water quality, but at relatively low levels and for a short duration of time.

Using paired watershed studies for regions of the United States, effects of silviculture practices on annual average stream discharge was depicted by Stednick (1996). In this study, the actions necessary for producing measurable increases in water yield (annual runoff) from forests in Arkansas was determined to be a 50% reduction in basal area across an entire watershed. This level of vegetation harvest would result in an increase of roughly six inches more runoff than normal runoff values for the first year. The recovery period for water yield to return to pretreatment level was found to be a function of vegetation re-growth. For Arkansas, this means that water yields should return to the pretreatment level quite rapidly; however, changes to peak flow and storm flow timing may continue if drainage patterns are altered by activities, such as road construction. Any changes to runoff timing should not result in impacts to current water uses or quality since the watershed with the highest amount of timber activities, Piney Creek-Petit Jean River, will only have 6.2% disturbance.

Roads are the most common source of accelerated erosion on National Forest lands. Road generated sediment may result from the erosion of cut and fill slopes, ditches, road surfaces, and road maintenance operations. Unpaved roads paralleling and crossing streams pose specific risks to water quality as they often maintain direct linkages with the stream channel. Roads result in three primary effects on forested lands: intercepting rainfall directly, concentrating flow, and diverting or rerouting water from traditional hydrologic pathways. Through these actions, road systems mimic the stream channel network, effectively increasing the drainage density of streams in the landscape; which may result in modifications to the timing of water delivery to stream systems; however, this is not expected to be a significant nor measurable difference from current conditions. The activities of the Proposed Action would work toward 'disconnecting' the road system from the stream network.

Upon completion of harvesting, any temporary roads required for access in the project area would be seeded, water barred and blocked. Guidance provided in the Forest Plan and the Arkansas Forestry Commission's Best Management Practices (BMPs) for Water Quality Protection outline the mitigation measures necessary to conduct these activities while controlling contributions to non-point source pollution. The remainder of the road work is road reconstruction, road maintenance, road decommissioning and road closure; all of which would result in a decrease in sediment production, which is a beneficial impact.

Direct and indirect impacts from this project are not expected to contribute to degradation of the current water quality in the project area. Implementation of the activities associated with this alternative would result in some of the above-mentioned effects to water quantity and quality; these effects have been shown from past research to be minimal and short lived in this part of Arkansas. Road stabilization through maintenance and reconstruction, erosion control through

revegetation of disturbed ground, and observance of streamside management zones around surface water features are design criteria implemented with every project to ensure the mitigation of adverse effects that may occur. The most likely effects from this alternative, beyond current conditions, are short-term increases in sediment, resulting mainly from road activities, and minimal increases in water production. With the application of the Arkansas Forestry Commission's BMPs for Water Quality Protection and current Forest Plan standards, the Proposed Action would not result in significant effects to water resources.

For this analysis, the cumulative effects to water resources were bound by the three sub-watersheds. Computer modeling was used for screening watersheds for possible problems. The Water Resource Analysis for Cumulative Effects model estimated sediment yield from both public and private lands, the existing road network, and from expected current and future activities. Current and future sediment yield was compared to estimates of an undisturbed landscape. An undisturbed landscape is described as an entirely forested watershed without roads. Sediment increases were then calculated as a percent above the undisturbed amount. This value was compared to potential risk values for identifying levels of concern for watershed conditions. These risk indicator values were empirically determined using a relationship between sediment values and the condition of the fisheries from select locations across the area.

The concrete low-water slab at Lee Creek will be replaced with a bridge or box type culvert to facilitate aquatic organism passage. This will cause temporary disturbance in sediment levels in the stream and has been represented in the sediment model with one mile of temporary road construction.

There are three risk values for every sub-watershed: low, medium, and high. A low concern indicates a minimal risk to water quality or no expected adverse effects to water resources or the designated uses. Low concern levels are generally achieved with a higher percentage of forested lands within the watershed. In watersheds with a moderate concern level, when possible, projects on public lands should be planned to avoid being conducted at the same time as any projects on unforested, generally private, lands. Proper application of all Forest Plan standards and Arkansas Forestry Commission BMPs should be verified for implementation. Assuming these guidelines are correctly applied, this project would result in minimal risks to water quality. A high concern signals that the water resources may be threatened by the current or future state of the watershed. Proposed activities should only be conducted with the application of appropriate Forest Plan standards and BMPs and offsetting projects, such as road decommissioning, to further reduce any sediment losses to streams. Projects with a higher potential for sediment production should be conducted with higher temporal distribution to spread out any effects. Short-term adverse effects to water resources may result from activities captured in the effects analysis. Through the implementation of Forest Plan standards and BMPs, no adverse effects are anticipated. Watersheds with high concern levels will be specifically targeted for BMP monitoring for implementation and effectiveness.

Based on the results of the model, the concern level for the Gulf Creek – Big Shoal Creek watershed increased from Low to Moderate between the No Action and the Proposed Action (Table 5). The other two watersheds within the project area remain unchanged. The concern levels for watersheds that rank Moderate or High in the No Action column are elevated due to higher levels of pasture and private ownership.

**Table 5. Model results of the Water Quality Cumulative Effects Analysis.**

<b>Sub-Watershed Analysis Area</b>	<b>No Action</b>		<b>Proposed Action</b>	
	<b>Increase (Tons)</b>	<b>Concern Level</b>	<b>Increase (Tons)</b>	<b>Concern Level</b>
Upper Short Mountain Creek 111102020106	34.35	Moderate	80.77	Moderate
Gulf Creek – Big Shoal Creek 111102020501	11.18	Low	198.28	Moderate
Piney Creek – Petit Jean River 111102040402	15.94	High	62.19	High

The activities proposed would result in additional sediment production from the landscape, but from a watershed perspective, contribute only a small increase to the overall estimated sediment yield. The project activities would take place over a 3- to 5-year period instead of instantaneously as modeled for the analysis, which would further reduce acute effects. The use of Forest Plan standards and Arkansas Forestry Commission BMPs is expected to reduce the impacts of the proposed activities even more. Given the results from the model and measures such as BMPs to reduce sediment input into streams, this project is not expected to produce cumulative effects that would be harmful to water quality.

## Addressing 36 CFR 219 Planning Rule Requirements

The 2012 Planning Rule requires notification on which of the substantive rule requirements for sustainability, plant and animal diversity, multiple uses, and timber (36 CFR 219.8-219.11) are likely to be directly related to the Plan direction being changed by the proposed plan amendment. A specific substantive requirement is determined to be “directly related” based on the purpose of the amendment, if the NEPA documentation reveals substantial adverse effects associated with the requirement, or if the amendment would substantially lessen protections for a specific resource or use.

During scoping in February 2020, the public was notified the planning rule requirements relating to sustainability (36 CFR 219.8) and multiple use (36 CFR 219.10) are likely to be directly related to the Plan direction being changed for this plan amendment. Since the purpose of this plan amendment is to change the designation of 5.75 acres from management area 2.B State Park to 1.G Special Interest Area in order to meet Forest Plan standards and guidelines regarding OHV usage, it has been determined that the planning rule requirements found in 36 CFR 219.8 (b) and 36 CFR 219.10 (b)(1)(i.) are “directly related” to this amendment. Therefore, within the scope and scale of this amendment, these requirements will need to be addressed.

The planning rule requirements are being met in this plan amendment by bringing the Forest Plan management area delineations into alignment with existing conditions on the ground prior to designation. Since the trail was existing at time of Forest Plan Revision in 2005, this amendment will not result in any changes to plan direction for any management area. Using the existing Forest Plan standards and guidelines within these management areas, this amendment allows for continued opportunity to connect people with nature while being recreationally sustainable.

## Finding of No Significant Impact (FONSI)

As the responsible official, I am responsible for evaluating the effects of the project relative to the definition of significance established by the CEQ Regulations (40 CFR 1508.13). I have reviewed and considered the EA and documentation included in the project record, and I have determined that the proposed action will not have a significant effect on the quality of the human environment. As a result, no environmental impact statement will be prepared. My rationale for this finding is as follows, organized by sub-section of the CEQ definition of significance cited above.

### Context

For the Proposed Action and No Action Alternative, the context of the environmental effects is based on the environmental analysis in this EA. Effects are local in nature and are not likely to be measurable at regional or national scales.

### Intensity

Intensity is a measure of the severity, extent, or quantity of effects, and is based on information from the effects analysis of this EA and the references in the project record. The effects of this project have been appropriately and thoroughly considered with an analysis that is responsive to concerns and issues raised by the public. The Agency has taken a hard look at the environmental effects using relevant scientific information and knowledge of site-specific conditions gained from field visits. My finding of no significant impact is based on the context of the project and intensity of effects using the ten factors identified in 40 CFR 1508.27(b), detailed below:

1. Impacts that may be both beneficial and adverse - A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

In the Environmental Impacts section (pages 15-21), the analysis found that negative effects from the proposed actions do not rise to the level of significance on environmental resources. Specifically, the soils analysis showed that the total area of disturbance from the proposed actions is less than the stated 15% threshold identified in the Forest Plan (pages 15-17). For the Northern long-eared bat, the analysis found that some individuals may be impacted, but the population as a whole will not be negatively impacted (page 17). The water quality analysis found that the proposed actions would result in additional sediment production from the landscape, but from a watershed perspective contribute only a small increase to the overall estimated sediment yield (pages 18-21).

2. The degree to which the Proposed Action affects public health or safety.

Public health and safety were not identified as issues that warranted detailed analysis. Public health and safety are considered as a part of the design criteria for the proposed actions (pages 13-14).

3. Unique characteristics of the geographic area such as the proximity to historical or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

There will be no effects on unique characteristics of the area. There are no parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas within the project area boundary. No adverse effects to historic properties or cultural resources are expected due to adherence to design criteria (pages 13-14). On August 12, 2019, the Arkansas State



Historic Preservation Office concurred with the site eligibility determinations. These determinations are used to determine which sites will be protected during treatment.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

The analysis is based upon the best available scientific information and site-specific data. Models and methods used to estimate the effects presented are widely used in similar analyses and have been reviewed by the research and academic communities. I am not aware of any credible, peer-reviewed scientific questioning of the methods used in this analysis, nor of its results (pages 15-21).

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The effects analyzed are not uncertain or involve unique or unknown risks. Design criteria associated with the types of actions being proposed for similar Forest-wide activities reduce the likelihood of any unknown risks associated with these activities.

6. The degree to which the action may establish precedent for future actions with significant effects or represents a decision in principle about a future consideration.

This action does not establish a precedent for future actions. All connected future actions have been included in this project and the effects are disclosed in the Environmental Impacts section (pages 15-21). Environmental analyses will be completed for any future projects and site-specific decisions will be made on whether or not to implement them. None of the selected actions are a major departure from types of activities common to the Ozark-St. Francis National Forests.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

Cumulative effects were analyzed and found not to be significant (pages 17 and 21).

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

These resources will be protected (design criteria on pages 13-14). On August 12, 2019, the Arkansas State Historic Preservation Office concurred with the site eligibility determinations. These determinations are used to determine which sites will be protected during treatment.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

Implementation of proposed actions may impact Northern long-eared bat individuals but will not negatively impact the population as a whole (page 17). All other threatened and endangered species that may occur in this project area will not be adversely affected due to adherence to the Forest Plan as stated in the design criteria (Biological Evaluation on file).

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

This project complies with all Federal and State laws relating to environmental protection. The selected action meets state air and water quality standards and complies with all regulations in the National Historic Preservation Act, National Environmental Policy Act, Endangered Species Act, Clean Air Act, and Clean Water Act.

## Conclusion

After considering the environmental effects described in the EA and specialist reports, I have determined that the Proposed Action alternative will not have significant effects on the quality of the human environment considering the context and intensity of impacts (40 CFR 1508.27). Thus, an environmental impact statement will not be prepared.

## **Agencies and Persons Consulted**

The Forest Service consulted the following individuals, Federal, State, tribal, and local agencies during the development of this environmental assessment:

### **Federal, State, and Local Agencies**

Arkansas State Historic Preservation Office  
United States Fish and Wildlife Service

### **Tribes**

Absentee Shawnee Tribe  
Caddo Nation of Oklahoma  
Cherokee Nation of Oklahoma  
Chickasaw Nation  
Delaware Nation  
Eastern Shawnee Tribe of Oklahoma  
Muscogee (Creek) Nation  
Osage Nation  
Quapaw Tribe of Oklahoma  
Shawnee Tribe  
Thlopthlocco Tribal Town  
United Keetoowah Band of Cherokee  
Wichita and Affiliated Tribes

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